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DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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August 29, 1988

Mr. Bryan Nielson
Plant Manager
Continental Lime, Inc.
P.O. Box 266
Delta, Utah 84624

Dear Mr. Nielson:

Re: Cricket Mountain Quarry, M/027/006, Milford County, Utah

As we discussed on July 13, 1988 the Division will require Continental Lime to do the following:

1. Post a new reclamation bond to cover the existing surface disturbance plus the anticipated disturbance for the next 10 years. As we agreed, Continental Lime will submit a map of the bond area and a detailed reclamation cost estimate to the Division by January 1, 1989. Frank Filas' field memo is enclosed and may be of value in preparing the estimate.
2. Install revegetation test plots this fall. Recommendations for the test plot and a list of contractors are enclosed.

It is also recommended that you amend the existing plan by requesting a variance from highwall elimination. Form MR-8 has been enclosed for this purpose. Refer to pages 91-94 of the Mined Land Reclamation Rules for further background on variances.

I would suggest that the first step taken to initiate the tests plots would be to evaluate the soil properties of the planting medium. Composite samples should be taken from the spoils material that will be seeded and sent into a soils lab for evaluation. The following parameter should be evaluated:

Soil Texture
pH
Alkalinity
Cation Exchange Capacity
Electrical Conductivity
Sodium Absorption Ratio
Available Nitrogen
Available Phosphorous
Available Potassium
Saturation %

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After the analysis, it will be easier for the contractor you pick to make a determination regarding soil admendments to be used in establishing your test plots. Let me suggest the admendments I had in mind: 1) elemental sulfur to reduce the pH of the substrate, 2) native hay mulch, 3,000 lbs/acre, to add texture and organic matter to the substrate and 3) fertilizer, 200 lbs/acre, diammonium phosphate 18-46-0, to add nutrients to the substrate. The number of plots necessary to evaluate each admendment, and a combination of admendments will equal 8, including the control:

- 1) Control
- 2) Elemental Sulfur only
- 3) Fertilizer only
- 4) Native Hay Mulch only
- 5) Elemental Sulfur and Fertilizer
- 6) Elemental Sulfur and Mulch
- 7) Fertilizer and Mulch
- 8) Elemental Sulfur, Mulch, and Fertilizer

It may be possible to eliminate one or some of these admendments, after the soils analysis have been made.

The following is a list of plant species which I think would grow on the spoils at your site with some coaxing. The rate is for drill seeding only. If these species were to be broadcast seeded, these rates should be doubled. There are a number of species on this list, but keep in mind that they are for the test plots only. You will be asked only to use the most well adapted species from this list (after test plot evaluation) at final reclamation:

| Grasses: | lbs. pure live seed/acre |
|--|--------------------------|
| 1. Agropyron smithii (Western Wheatgrass) | 2 |
| 2. Agropyron riparian (streambank wheatgrass) | 2 |
| 3. Agropyron dasystachyum (thickspike wheatgrass) | 2 |
| 4. Oryzopsis hymenoides (indian ricegrass) | 2 |
| 5. Hilaria jamesii (galleta grass) | 2 |
| 6. Agropyron cristatum (crested wheatgrass) | 2 |
| 7. Elymus junceus (russian wildrye) | 2 |

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| Forbs: | lbs. pure live seed/acre |
|--|--------------------------|
| 1. Melilotus officinalis (yellow sweetclover) | 1 |
| 2. Medicago sativa (alfalfa) | 1 |
| 3. Spaeralcea ambigua (desert globemallow) | 1 |
| 4. Penstemon palmeri (palmer penstemon) | 1 |
| 5. Linum lewisii (lewis flax) | 1 |
| Shrubs: | |
| 1. Atriplex canescens (fourwing saltbush) | 2 |
| 2. Atriplex confertifolia (shadescale) | 2 |
| 3. Ceratoides lanata (winterfat) | 2 |
| 4. Chrysothamnus nauseosus (rubber rabbitbrush) | 2 |

These are my suggestions only. After you set something up with a contractor, I'm sure there will be some changes. The location of the plots is something you will need to work out with your contractor as well.

If you need more specific information for the construction of these plots, let me know. Another trip down to your site would also be feasible, to consult with a contractor.

Thank you for your cooperation. Please feel free to contact me if you should have any questions.

Sincerely,



Holland Shepherd
Reclamation Soils Specialist

jb
Enclosures
cc L. Braxton
W. Hedberg
J. Mansfield, State Lands
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